DIRECT TESTIMONY OF
DAVID A. WHITELEY
ON BEHALF OF
DOMINION ENERGY SOUTH CAROLINA, INCORPORATED
DOCKET NO. 2020-125-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND AFFILIATION.

A. My name is David A. Whiteley. My business address is 8500 Maryland Avenue, #706, St. Louis, Missouri, 63124. I am the owner of Whiteley BPS Planning Ventures LLC, a consulting firm offering management, planning, operating, and other advisory services to the electric and gas utility industry.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND BUSINESS BACKGROUND.

A. I hold a bachelor's degree in electrical engineering from Rose-Hulman Institute of Technology, Terre Haute, Indiana and a master's degree in Electrical Engineering from the University of Missouri-Rolla. I also have a Professional Degree in Engineering from the Electrical Engineering Department of the University of Missouri-Rolla.

Prior to starting Whiteley BPS in 2009, I was employed by the North American Electric Reliability Corporation ("NERC") as Executive Vice President from March 2007 to March 2009. In that position, I was responsible for overseeing NERC's activities in Standards; Reliability Readiness; Training, Education, and Personnel Certification; Event Analysis; Metrics and Benchmarking; and Members'

Forums. In this role, I was responsible for the development of transmission planning standards, obtaining industry and Federal Energy Regulatory Commission (FERC) approval of new and modified standards, the completion of reliability readiness evaluations of registered reliability entities and communication of examples of excellence to the industry, developing training protocols and programs for system operators and managing a process to certify system operators, and investigating events of failure on the transmission system.

I left NERC to take on the role of Executive Director of the Eastern Interconnection Planning Collaborative (EIPC) from 2009 to 2018 after having helped lead the development of the organization. The EIPC is a consortium of NERC-registered transmission planning authorities in the eastern U.S. and Canada working to develop a regionally-based process to perform interconnection-wide analysis of the eastern portion of the bulk power system in North America, which includes almost all of the United States east of the Rocky Mountains (excluding most of Texas) and much of eastern Canada. The mission of EPIC is to engage in collaborative activities that will enhance the transmission planning and coordination among the Planning Coordinators in the Eastern Interconnection. The EIPC conducts periodic interregional transmission gap analysis and linear transfer analysis, and works collectively on issues that will further benefit the entire Eastern Interconnection. The results from the periodic analyses provide input to EIPC member regional planning processes where specific improvements to the transmission system are identified. All major Eastern Interconnection transmission planning authorities are members of EIPC and their planning areas cover approximately 95% of the customers in the Interconnection. This role gave me a second window, after my role at NERC, into the planning and operations of a large number of utility systems and specifically into how improvements to the transmission system are implemented over time. Balancing the cost and performance of the transmission system is a key element in that process.

Prior to the position at NERC, and I was Senior Vice President - Energy Delivery Services for Ameren Corporation, a combined electric and gas utility serving over 2 million customers in the metropolitan St. Louis, Missouri area as well as portions of eastern Missouri and southern Illinois. Prior to that I held positions at Ameren as Senior Vice President – Energy Delivery, Vice President – Energy Delivery Technical Services, and several engineering positions in transmission planning, transmission line design and transmission operations. I also serve on the Board of Directors for Unitil Corporation having been elected in 2012. Unitil is a public utility holding company with electric and gas operations in Maine, New Hampshire and Massachusetts. I currently chair the Nominating and Governance Committee and serve as a member of the Audit and Executive Committees.

Additional information regarding my professional experience can be found in **Exhibit No. __ (DAW-1)**.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. No. But I have testified on several occasions before the Missouri Public Service Commission, Illinois Commerce Commission, and the FERC when employed at Ameren. I have also testified before FERC and the U.S. House of Representatives Subcommittee on Emerging Threats, Cybersecurity, Science and Technology under the Committee on Homeland Security in my role as Executive Vice President of NERC.

Q. PLEASE DESCRIBE THE PURPOSE AND SCOPE OF YOUR TESTIMONY

A. The purpose of my testimony is to provide the results of a review of the planning, development, and use of transmission upgrade projects that were undertaken to reinforce the DESC[1] transmission system in anticipation of the completion of two new nuclear generating plants, and to provide an opinion on the value of those projects to customers. These transmission upgrade projects ("Transmission Upgrade Projects") are more fully described in testimony by Joseph Wade Richards which was filed in Docket No. 2017-370-E. I have reviewed the testimony of Joseph Wade Richards in that docket and the testimony of Edward G. McGavran III in this proceeding, as well as responses to data requests from the Office of Regulatory Staff ("ORS") that are a part of this proceeding. In addition, I reviewed the testimony of Hubert C. Young, III in Docket No. 2008-196-E which was given in the proceedings when the Transmission Upgrade Facilities were initially approved to move forward. Furthermore, I met with representatives of the DESC planning staff to review the studies on which Mr. Young's and Mr. Richards'

[1] In April 2019, SCE&G changed its name to Dominion Energy South Carolina, Inc. as a result of the acquisition of SCANA Corporation by Dominion Energy, Inc. For consistency, I use "DESC" to refer to the Company both before and after this name change.

testimony was based, to become familiar with the techniques and goals used in their planning processes and analyses, to understand the specific results of those analyses, and collect additional information on the current and future use of the Transmission Upgrade Facilities.

Q. WHAT IS YOUR OVERALL CONCLUSION BASED ON THIS REVIEW?

A. Starting with the initial planning of the Transmission Upgrade Projects and carrying through to the studies showing the current need for those facilities, DESC has used appropriate and accepted planning processes to determine the present and future transmission needs on its system. It moved forward to construct the Transmission Upgrade Projects in a timely and appropriate manner given the needs of the system as a whole. The planning studies performed meet or exceed industry standards in the way they were conducted and they provided results that are similar to what would be expected in other locations on the transmission system in North America for similar situations. In addition, the DESC planning processes and results have been audited by the Southeastern Electric Reliability Council (SERC) as part of the NERC compliance process and have been found to be fully compliant with the NERC requirements.[2]

DESC studies properly used planning standards that are generally applicable across multiple utilities and where appropriate, and consistent with generally accepted planning standards, they employed planning standards that are specific to

[2] SERC completed reliability audits of DESC's compliance with operations and planning standards in 2017 and 2020. In both cases there were no adverse findings, no areas of concern, and no recommendations.

the DESC system and its requirements. The standards themselves are reasonable and appropriate. The resulting studies properly determined specific new or upgraded facilities that were required to ensure adequate transmission system performance going forward and the deficiencies in the system that would exist currently if the new or upgraded facilities had not been built or put into service. The new and upgraded facilities installed are of reasonable capability and size when taking into consideration both current and future needs and were constructed at a very reasonable price. The Transmission Upgrade Projects have substantially improved the performance of the DESC transmission system and that system would be in serious violation of NERC standards without them. DESC customers have benefited from these projects since they were completed and will continue to benefit from them in the future.

Q. WHY DO YOU CONCLUDE THAT THE PLANNING PROCESS USED IS APPROPRIATE?

A. Transmission planning is a very complex process that must properly account for many factors as they are forecasted to evolve and interact over a time frame of 10 years or more. Transmission planners must accurately identify these factors and incorporate them in the computer models they use to analyze the system. They consider numerous scenarios in the determination of what facilities are the best facilities to be constructed to meet the needs of customers in the most economical manner.

My review shows that the DESC analyses have correctly taken the relevant factors into account. Factors such as forecasted changes in customer demand patterns and changes in generation patterns, including planned generation additions and retirements, have been considered. And appropriate contingency situations were considered and modeled in each step of the planning process. The transmission planning standards utilized by DESC to judge system performance are fully consistent with those used throughout the industry and are aligned with NERC requirements. DESC's transmission planning demonstrates a high level of diligence in the planning process, careful adherence to NERC requirements and overall good utility practice.

For the Transmission Upgrade Projects specifically, the initial DESC analyses were started in the mid-2000's. In 2008, they reached the conclusion that the new and upgraded facilities described in Hubert C. Young, III's testimony in Docket No. 2008-196-E were needed. From 2008 forward, the Transmission Upgrade Projects have been included in DESC planning analyses because they were understood to be the best solution to address the future needs of the DESC transmission system. From my review of the record, it does not appear that the conclusions of those analyses were disputed in the earlier proceedings and they have been accepted by South Carolina Energy Users Committee and South Carolina Department of Consumer Affairs in witness McGavran's testimony in this proceeding. See McGavran testimony at page 4, lines 16-18.

Q. WERE THESE PROJECTS SIMPLY CONCERNED WITH CONNECTING NEW GENERATION UNITS TO THE GRID?

A. No. These projects were part of a comprehensive upgrade to major components of the DESC transmission system to allow it to meet customers' needs reliably and efficiently going forward. They were not just a means to connect the new generation. If they were, the upgrades would only have consisted of new 230kV lines extending from the generation units to one or two interconnection points on the system. That configuration is typical of facilities called "generation lead lines" which are lines built for the only purpose of connecting new generation the grid. The Transmission Upgrade Projects are not generation lead lines. The new 230kV transmission connects into multiple locations and along with the other elements of the overall project address multiple existing and anticipated shortcomings of the system. In particular, they address the need for additional north-south reinforcement and relief for the 115kV system that has previously carried much of the flow of power from north to south. The Transmission Upgrade Projects extend and connect to multiple points on the transmission system, provide a substantial north-south transmission path, and reinforce the lower voltage 115kV system. As such, the Transmission Upgrade Facilities have become an integral part of the DESC transmission system as it is used by customers every day.

Once completed and placed in-service, these facilities began benefiting DESC customers while providing capability and flexibility for future needs. Achieving integrated transmission performance, not just a generation connection, is the goal of a well conducted planning processes. And that is what these Transmission Upgrade Projects accomplished. They fundamentally changed the capacity and operating characteristics of the system as a whole and since their initial approval have been included in the planning process and relied on when determining future transmission needs and capabilities.

Q. ARE THESE FACILITIES USED AND USEFUL?

A. Yes. These facilities are not simply used and useful, but are essential to the usefulness of DESC's transmission system in serving customers today and its compliance with mandatory NERC and FERC reliability standards[3] and regulations. As I will more completely describe below, the facilities as built are used and useful in solving what otherwise would be extensive overloads and shortcomings on the transmission network. These facilities were constructed as part of a comprehensive plan to address numerous shortcomings on the transmission system, not just the delivery of output from the new nuclear units. They provide reinforcement along the critical north-south corridor through the state of South Carolina that is needed support reliable service to customers and compliance with NERC reliability standards. The importance of reinforcing the north-south corridor cannot be understated. The Transmission Upgrade Facilities were designed to be the best solution and continue to be the best solution for DESC customers.

[3] NERC reliability standards are approved by FERC in accordance with the rules of procedure for NERC functioning as the Electric Reliability Organization (ERO) under the Energy Policy Act of 2005.

Q. WHY DO YOU CONSIDER THE TRANSMISSION UPGRADE FACILITIES TO BE USED AND USEFUL?

A. The facilities are in-service today and have been fully integrated into the DESC transmission system. Based on studies completed by the company as described in Joseph Wade Richards testimony that was noted earlier, conditions studied with and without the Transmission Upgrade Facilities show the DESC system would be inadequate in the case without the facilities. See Richards testimony at page 21, lines 9 to 17. These analyses are also undisputed and no other witnesses have provided any quantitative analyses to show that the transmission performance is anything other than that found by Richards.

Q. PLEASE EXPLAIN THESE STUDIES AND THEIR RESULTS FURTHER.

A. The Richards' studies were conducted using data and detailed analyses from scenarios modeling summer and winter peak demand, as well as off peak demand patterns over a 10-year period stretching from 2018 to 2028. This comprehensive and detailed study demonstrates that the facilities are needed today and continuously throughout the 10-year planning horizon.

Q. DOES WITNESS MCGAVRAN INTERPRET THESE STUDIES CORRECTLY?

A. No, he does not. Witness McGavran incorrectly states that the results only show a need in 2028. Factually, this is not correct. The studies themselves show that major violations of standards and reliability deficiencies would exist today in the DESC system if the Transmission Upgrade Facilities were not in place. The

Richards' studies show contingencies, that could occur today, would overload the system absent the Transmission Upgrade Facilities.

Furthermore, NERC reliability standards mandate that utilities use reasonable processes to identify long-term reliability problems, and mandate that action be taken to address those problems before they become actual reliability issues. These standards do not allow utilities to ignore future reliability deficits, such as the reliability deficits Mr. McGavran incorrectly references as not requiring a response until 2028. The NERC standards recognize that designing, engineering, siting, procurement and construction of necessary transmission facilities is a long-term process and they do not allow a planning process to let transmission deficits pile up over time. The NERC standards cover all aspects of that process.

From my review of the studies, it is clear that without the Transmission Upgrade Projects in place, DESC's transmission system would be deemed inadequate and flagged as violating multiple NERC Standards. If the Company did not have the Transmission Upgrade Facilities in place, it would be open to extremely large penalties for poor transmission planning and system operation, as well as violating normally accepted good utility practice. Without the Transmission Upgrade Facilities in place today, the level of inadequate performance that would be attributed to this system would be unprecedented. In my experience, I have never seen any other system in North America with the level of inadequacies that would be present today if the Transmission Upgrade Facilities had not been constructed. That result alone makes it clear the facilities are used and useful.

Q. EARLIER YOU MENTIONED THAT THE TRANSMISSION UPGRADE FACILITIES ARE OF REASONABLE CAPABILITY TAKING INTO CONSIDERATION BOTH CURRENT AND FUTURE NEEDS. WHAT DO YOU MEAN BY THAT?

A. The Transmission Upgrade Facilities appropriately include new facilities that have the capability or size to ensure no overloads or other system problems such as low voltage conditions occur when considering both current and future time frames with and without possible contingency situations. The facilities are not over built or built to a capacity that is unreasonably large and not needed. Needless to say, DESC could have deployed much larger and higher voltage transmission facilities, but that would not have made sense. And while the large capacity 230kV transmission lines built may seem to be bigger than needed, that is not the case. My experience shows that the best approach is to build transmission lines of a reasonably large capacity to serve today's needs as well as future needs with flexibility to accommodate reasonable changes that may occur on the system. With transmission facilities expected to last 40 or 50 or more years, it is good practice to install capacity that creates the flexibility needed to meet future conditions as the develop.

Q. CAN YOU PROVIDE AN EXAMPLE OF CHANGES ON THE TRANSMISSION SYSTEM THAT MAY BE DIFFICULT TO IDENTIFY IN ADVACE?

A. Just as one example, consider the significant changes to generation patterns like those that can occur with changes in market conditions, like the drop in natural gas prices, which was unforeseen just a few years ago, or the deployment of a new technology like solar generation, which now has increased availability. The need for larger capacity facilities is essential to provide for the flexibility to address these types of unanticipated changes.

It is also important to understand that transmission lines of any voltage basically come in building block sizes. This is true for all utility transmission systems. These building blocks center around the capability of electric equipment such as circuit breakers, switches, and transformers as well as engineering designs that optimize the cost of transmission structures and the conductors they carry. Based on my experience with solving problems of a magnitude similar to those of the DESC system, customers are getting a good deal today by utilizing the building block sizes chosen by DESC and constructing the Transmission Upgrade Projects as a comprehensive, integrated program rather than piecemeal. Those benefits will continue to accrue in the future as new demand and generation patterns unfold.

Q. HAVE YOU CONSIDERED THE COSTS OF THE TRANSMISSION UPGRADE FACILITIES IN YOUR REVIEW?

A. Yes. While I have not reviewed each component and cost for each piece of equipment in the upgraded facilities, I have had a chance to review the overall 230kV transmission cost and compare it to costs typically seen by other utilities. The total project cost of approximately $345 million includes approximately $265 million for new 230kV transmission lines. These 230kV lines represent about 176 miles of new double circuit construction with a total cost of about $251 million and about 10 miles of single circuit construction with a total cost of about $14 million. This equates to a cost of about $1.4 million per mile for the single circuit 230kV transmission, which encountered several difficult construction challenges that increased costs, and roughly the same for the double circuit transmission. Looking at these totals, the cost of the 230kV transmission lines built by DESC, which is a major component of the overall cost of the Transmission Project Facilities, are comparable to or lower than expected costs for similar facilities in other utility systems.

Q. HOW CAN YOU DRAW THAT CONCLUSION?

A. From 2010 to 2015, I was the Project Manager for a large study of the Eastern Interconnection Transmission Grid considering possible future transmission development driven by large scale changes to the generation resource mix. This study was sponsored by the U.S. Department of Energy and considered the entire transmission system from the Atlantic Ocean to the Rocky Mountains including portions of Canada. In that study, we compared the cost of different future transmission systems that were needed to support various possible changes to generation resources. In compiling the costs for the scenarios considered in the study we used transmission costs collected from utility systems across the footprint. These cost estimates were reviewed by a Stakeholder Committee comprised of representatives from utilities, state commissions, consumer advocates, environmental organizations, and independent generation developers. For 230kV transmission lines, that Stakeholder Committee agreed to use a cost of $1.6 million per mile for single circuit construction and $1.8 million per mile for double circuit construction. Comparing these two pieces of information shows that the cost of the 230kV transmission lines built by DESC, which is a major component of the overall cost, are comparable to or lower than expected costs for similar facilities in other utility systems. This is consistent with Company witness Mr. Kissam, who testifies concerning the economies of scale, procurement advantages, and construction efficiencies of building this comprehensive suite of transmission upgrades under a single, multi-year EPC contract.

Q. WHAT DO YOU CONCLUDE AS A RESULT OF REVIEWING THE TESTIMONY OF EDWARD G. MCGAVRAN?

A. I found several deficiencies to highlight. The first issue is that McGavran does not recognize the timeline of this situation and the extremely long lead-time required for building new transmission facilities. He presents the case as if there are only two points in time. The first point in time is when the Commission approved the project, where he accepts the Transmission Upgrade Projects as appropriate. And then the second, and only other point in time under consideration, is when the decision was made to cancel the new generating units. The fact is that, based on information provided by the Company, the EPC Contract for the Transmission Upgrade Projects was signed in 2011, procurement of major structures and material took place in late 2011, and the projects were well underway in early 2012. The implication in McGavran's testimony is that DESC should have known the generating units would be cancelled and therefore should have never started to build the approved Transmission Upgrade Projects because they would no longer be needed. Or alternatively, that DESC should have waited to build the facilities until after the generating units were completed.

Q. DO YOU AGREE WITH THESE CONCLUSIONS?

A. No, I do not. While my earlier testimony shows the transmission upgrades are indeed used and useful today based on current and future system performance, putting that aside, his conclusion is unrealistic because it either assumes prior knowledge that the units would be cancelled, which is contrary to everyone's thinking at the time the Transmission Upgrade Facilities were constructed, or that DESC should have waited to start construction making it impossible to have them in-service when the generating units would have been completed. To assume transmission facilities can be built and upgrades completed in short time frames is unreasonable and puts the transmission system at risk of being inadequate. DESC appropriately planned and built the needed facilities considering the long lead times for new transmission construction.

Q. WERE THERE OTHER ISSUES YOU FOUND WITH RESPECT TO MCGAVRAN'S TESTIMONY?

A. Yes. The second issue is that McGavran makes general conclusions about the performance of the transmission system without introducing any analyses or data contrary to the results of the company's analysis. McGavran testimony at page 2, line 21 says he will "demonstrate" the cost exceeds the benefits, but has presented no transmission planning studies or economic analyses to make that demonstration. In fact, he accepts the company's studies from Mr. Young's testimony in 2008 (McGavran page 4, line 16) and Richards' testimony noted earlier (McGavran page 9, line 1-2) that clearly show a significant benefit of the Transmission Upgrade Projects while saying any benefit is "marginal at best" (McGavran page 9, line 4). Furthermore, he states there are no other benefits to the Transmission Upgrade Projects (McGavran page 8, line 5) but does not provide any supporting studies, data or evidence to support the general claim. The testimony of Mr. Richards, which does provide actual study results that are reasonable and undisputed, show quite the opposite. McGavran tries to make general unsubstantiated arguments about the many secondary benefits of the Transmission Upgrade Projects described in Mr. Richards' testimony, but ignores the key element that the system would be inadequate without the Transmission Upgrade Projects.

The third issue is that he incorrectly states that SERC and NERC standards would not require a transmission expansion "of this magnitude" (page 13, line 4), but doesn't acknowledge the magnitude of the transmission system inadequacies without the Transmission Upgrade Facilities. Furthermore, he provides no evidence that any other alternative transmission development comprised of fewer or lower capacity facilities would make it adequate. In my experience, given the size of the inadequacies shown through Mr. Richard's analyses, a substantial transmission backbone addition, which is included in the Transmission Upgrade Project, along with required reinforcements of connecting substations and lower voltage systems (e.g. 115kV) is typically the most appropriate answer considering all factors.

Finally, McGavran incorrectly refers to the upgrades as not being needed until 2028 (page 13, lines 20-23). The analysis that Richards presents was conducted using transmission study models for a number of years from 2018 through 2028 simulating both summer and winter conditions, and in each of these years there are inadequacies identified. This demonstrates that the need for additional transmission facilities goes back at least to 2018 and that need continues throughout the 10-year period. Furthermore, McGavran gives no credit for the fact that during the 10-year period and beyond the new facilities are adding direct value for rate payers because the need for additional facility upgrades have been eliminated or deferred because the strength of the system has been markedly improved. This can easily be the case when changes such as generation retirements, new generation additions or changes in customer demand occur.

Q. WHY DO PLANNERS LOOK INTO THE FUTURE 10 OR MORE YEARS?

A. The goal of the transmission planning process is to find best solutions for an uncertain future given many variables in the analysis and very long lead times for completing solutions to any problems that are uncovered. Frequently, construction of new transmission facilities takes 5 or even 10 years to complete depending on the magnitude of the project. This results in a very complex engineering problem. And many times, solutions to one challenge on the system can be folded into solutions to other system problems.

Q. IS THIS WHAT DESC DID?

A. Yes, this is what DESC has done. The Transmission Upgrade Projects were planned as the best solution not only for the delivery of new nuclear generation but also for the solution to other long-term system needs all while building flexibility to address changes in the future. For example, one benefit is that the new 230kV transmission completed as part of the upgrades provides a significant north-south pathway that allows new generation sources to be located anywhere along that path at the same time it provides loading relief to lower voltage 115kV facilities. This allows the 115kV facilities to be used to connect new customer load and new generation resources without additional reinforcement, while other new load or generation can be served from the 230kV depending on the particular needs at the time.

Q. HAS THIS 10-YEAR PLANNING HORIZON BENEFITED CUSTOMERS?

A. Yes. The longer-term consideration in the planning of the Transmission Upgrade Projects is another example of how they are a good deal for customers even though one of the original drivers for the projects no longer exists. One specific example would be that new solar projects would likely more appropriately be connected to the 115kV system rather than lower voltage facilities or directly to the 230kV system. With the loading relief in place as mentioned above, those new projects can proceed without larger scale 115kV reinforcement taking place. Based on my discussions with DESC planning staff, this is particularly true in the Orangeburg and Beaufort areas where, as Mr. Parker testifies, the development of new solar resources has been accommodated using capacity on the 115 kV lines offloaded by the Transmission Upgrade Project. In addition, the Transmission Upgrade Facilities provide flexibility for new generation resources in the Columbia and Lowcountry areas and will provide a basis of existing system strength to facilitate potential generation retirements as the DESC system resource mix shifts from coal to natural gas and renewables.

Q. EARLIER YOU STATED THAT YOU REVIEWED SEVERAL DATA REQUEST RESPONSES FROM OFFICE OF REGULATORY STAFF. WHAT DATA RESPONSES ARE YOU REFERRING TO?

A. ORS Data Requests 5-68, 5-69, 10-18, 10-19, 11-11 and 11-21. All of these data requests deal with actual or potential flows on 230kV facilities associated with the Transmission Upgrade Projects for current or future years. The company responded by providing transmission line flows, transmission loading as a percentage of facility rating, and projected transmission line flows in Megavolt-Ampere (MVA) and percentage of facility rating values.

Q. WHAT DID YOUR REVIEW SHOW?

A. The transmission loading, both historic and projected, appears to be reasonable and expected for the conditions with all facilities in-service or contingency conditions. This conclusion recognizes that the transmission system must have substantial reserve capability at all times to withstand unanticipated events such as single or multiple facility outages, customer demand changes, generation shifts, and purchases and sales of energy across the transmission grid. It may appear that the percentage loading is low as shown in the response to ORS Data Request 5-68, particularly since the equivalent for generating units, which is capacity factor, is typically quite high in the 70% to 90% range. However, it is not low. The Company responses to ORS Data Request 5-68, 11-11 and 11-21 appropriately explain the situation and I agree with those responses. Regular operation of transmission facilities at or near their maximum capability is not appropriate and is not consistent with good utility practice.

Q. CAN YOU FURTHER VALIDATE THIS DATA?

A. Yes. To demonstrate that the data shown in the responses to ORS Data Request 5-68 and 5-69 for the DESC transmission lines in question are not unusual for the utility industry, I asked DESC planning staff to compile data on transmission loading found in the most recent planning summer peak and winter peak transmission system simulations for transmission facilities across the eastern portion of the United States, as well as for transmission facilities in just the southeastern portion of the country. They do not have access to hourly data for other systems that is similar to that provided in the responses to Data Request 5-68 and 5-69, however a comparison of peak usage values would yield a similar answer. We know that average loading for all hours of a year is always significantly lower because of the large number of hours when the system is off-peak, which is consistent with other utilities. Furthermore, a comparison of peak loading is more appropriate because that is what determines the need for transmission. If you can't meet the peak demand it really doesn't matter if you can meet the average demand. The data compiled shows percentage loading for various seasons of the year 2021.

Chart A

Comparative Loading of 230 kV Lines at Summer and Winter Peak and During Spring and Fall Conditions

2021 Season and Portion of the Transmission System	MVA Loading (%) All Transmission	MVA Loading (%) 230kV Only
Summer Peak – all EI*	19.3	22.9
Summer Peak – Southeast	19.1	21.5
Winter Peak – all EI	15.7	19.6
Winter Peak – Southeast	16.1	18.3
Spring – all EI	18.1	21.2
Spring – Southeast	16.5	19.4
Fall – all EI	15.7	19.3
Fall – Southeast	16.1	17.7

* Eastern Interconnection

This analysis shows that DESC's 230kV loading is typically slightly higher than the average loading of all transmission facilities in the Eastern Interconnection, which is between 15.7% and 19.3%. Focusing just on the 230kV facilities in the southeast, this analysis shows a range of 230kV loading of between 17.7% and 21.5%. Office of Regulatory Staff witness Seaman-Huynh's testimony on page 19 in Table 4 presents maximum loading during the test year for the 230kV transmission lines included in the Transmission Upgrade Facilities that range between 20% and 26%. Comparing these two results shows that the DESC 230kV facilities in question are utilized at higher levels than the average 230kV transmission line in either the Eastern Interconnection as a whole or just those in the Southeastern portion of the Interconnection. While this is just one snapshot comparison, I believe it is reasonable to conclude that the DESC transmission facilities in question are being utilized in a similar manner and at similar loading levels to other facilities on the transmission system in North America. DESC has not been built to a capacity that unreasonably exceeds what is required and is similar to how other transmission facilities across the system are being utilized.

Q. WHAT CONCLUSIONS DID YOU REACH REGARDING THE TRANSMISSION UPGRADE PROJECTS?

A. First, the DESC studies are undisputed. They are solid studies based on sound engineering practices applying industry recognized standards for performance of the transmission system. Those studies yielded solutions to system needs that are typical within the industry. Second, the new transmission facilities have been and continue to be used and useful today and they are providing benefits to current and future DESC customers now and in the future. Although they would have accommodated new generation resources at V. C. Summer, they were also planned to be an integral part of the DESC transmission system and reinforce the transmission system's north-south corridor. This reinforcement now benefits system performance, flexibility, reliability and resiliency, along with the ability to facilitate generation retirements and connection of new generation resources. Put another way, the DESC transmission system would be inadequate without these facilities. Third, the current and expected level of loading on the Transmission Upgrade Facilities is in line with what would normally be expected for systems across North America and is in the range of reasonableness recognizing all the potential operating needs. And finally, the cost of the Transmission Upgrade Facilities is not out of the range of reasonableness in my opinion and customers are benefitting from their construction even without the nuclear generation attached. In essence, these facilities are a good deal for customers today and tomorrow.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

David A. Whiteley

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Qualifications

Electric and Gas Utility Executive with over 40 years' experience in the leadership of electric and gas utilities, bulk electric power system standards development, standards compliance activities, reliability assessments, and the engineering and operation of large electric and gas utility delivery systems. Broad knowledge of utility industry issues, regulatory and legislative activities, business organization skills, contractual solutions, utility system planning and operation, and communications.

Business Experience

Member, Unitil Corporation Board of Directors (2012 – present)

Elected to the Board of Directors of Unitil Corporation in December, 2012. Unitil is a public utility holding company with electric and gas operations in Maine, New Hampshire and Massachusetts. Currently the Chairman of the Nominating and Governance Committee and member of the Audit and Executive Committees.

Executive Director, Eastern Interconnection Planning Collaborative (3/15/09 – 12/31/18)

Engaged as the lead organizer and ultimately the Executive Director of the Eastern Interconnection Planning Collaborative (EIPC). The EIPC is a consortium of planning authorities in the eastern U.S. and Canada working to develop a regionally-based process to perform interconnection-wide analysis of the eastern portion of the bulk power system in North America. Results of this effort include landing a $16 million award from the U.S. Department of Energy to perform interconnection-wide studies in the Eastern Interconnection.

North American Electric Reliability Corporation Executive Vice President (3/1/07 – 3/15/09)

Responsible for overseeing the performance of six program areas: Standards; Reliability Readiness; Training, Education, and Personnel Certification; Event Analysis; Metrics and Benchmarking; and Members' Forums. Work directly with the Board of Trustees to create the strategic direction for the company. Manage and lead the strategic and program area business plans of the organization. Lead the development of relationships with the company's Member Representatives Committee and Regional Entity CEOs. Represent the company in front of regulatory agencies, legislative bodies, and the media.

Ameren Corporation (1/1/05 – 2/1/07)
Senior Vice President – Energy Delivery Services

Responsible for the planning, design, construction and technical support for all electric transmission and distribution systems for Ameren's operating utility companies – AmerenCILCO, AmerenCIPS, AmerenIP and AmerenUE. Serve as a member of the Board of Directors for several Ameren subsidiary companies, as well as CEO of Ameren Communications Company. Direct the company's strategy and policies on transmission and serve as the lead executive for Ameren's relationship with the FERC and Midwest ISO on transmission issues. Participate in the North American Electric Reliability Council activities as Ameren's executive contact.

Manage and optimize an annual $ 160 million capital budget and $ 175 million operations and maintenance budget. Lead the Transmission, Energy Delivery Technical Services, and Energy Delivery Business Services operating groups that include over 1,100 professional and bargaining unit employees.

Ameren is an integrated electric and gas utility formed at the end of 1997 through the merger of Union Electric Company and Central Illinois Public Service Company. Ameren acquired Central Illinois Light Company in 2003 and Illinois Power Company in 2004. Ameren now serves over 2.3 million electric customers and over 900,000 natural gas customers in Missouri and Illinois. Ameren is headquartered in St. Louis, Missouri.

Senior Vice President – Energy Delivery (10/1/03 – 12/31/04)

Responsible for all electric and gas energy delivery functions of Ameren's operating utility companies – AmerenUE, AmerenCIPS, and AmerenCILCO. Oversee the integration of the Central Illinois Light Company (CILCO) energy delivery functions into Ameren following the acquisition of CILCO in 2003. Serve as Ameren's lead energy delivery contact as part of the negotiations to acquire Illinois Power from Dynegy.

Senior Vice President (9/1/02 – 10/1/03)

Responsible for Ameren's Corporate Planning, Energy Delivery Technical Services and Supply Services organization. Manage a broad range of issues from the merger and acquisition and strategic planning activities of Corporate Planning to the purchasing, stores, real estate and facilities management activities of Supply Service. Oversee the optimization of business and corporate services in these areas.

Vice President – Energy Delivery Technical Services (1/1/00 – 9/1/02)

Responsible for the following Departments:

- Energy Supply Operations
- Electrical Engineering and Transmission Planning
- Construction and Services
- Substations and Transmission
- System Relay Services

Union Electric Company

Manager, Electrical Engineering and Transmission Planning	(1996 - 1999)
Manager, Transmission Planning	(1993 - 1996)
Supervising Engineer, Transmission Line Design	(1990 - 1993)
Supervising Engineer, System Planning Department	(1985 - 1990)
Engineer, System Planning Department	(1978 - 1985)

Educational/Technical Skills

Bachelor of Science - Electrical Engineering 1978 - Summa Cum Laude
Rose-Hulman Institute of Technology
Master of Science - Electrical Engineering 1985
University of Missouri – Rolla
Professional Degree in Engineering 2004
University of Missouri – Rolla
Registered Professional Engineer in Missouri and Illinois